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FACT SHEET



UNITED STATES
DEPARTMENT
OF AGRICULTURE

ENERGY CONSERVATION IN THE RURAL HOME

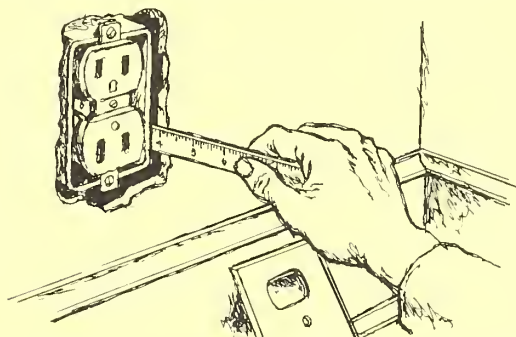
How To Install Insulation For Walls

Most homeowners could reduce their heating costs from 20 to 30 percent and their cooling costs by 10 percent just by bringing their home insulation up to an efficient standard.

First, Find Out What You Already Have

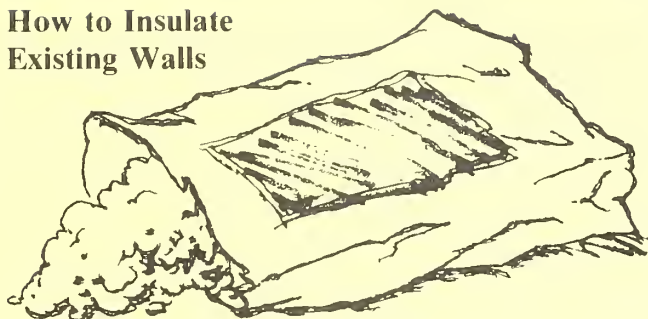
To accomplish this, you, as a homeowner, should find out first how effective your current insulation is. Check what you have in your ceilings, in your walls, and even around your slab foundation. Next, assess its R-value (an effectiveness rating applied to all insulation).¹ If you know what kind of insulation you have and how much of it you have installed, you can estimate the R-values, either from a table rating insulation materials or from labels on new insulation that corresponds to the material in your home.

Unless you were around when your house was built, you probably have little or no idea of how much, if any, insulation is in your finished walls. Find out by removing a light switch and using a flashlight to see how much insulation is in your walls. As a precaution, turn off the electricity at the circuit box before doing this.



¹ A minimum of R-11 is recommended for exterior walls. See Agricultural Fact Sheet 2-3-8 "How to Determine Your Insulation Needs" for an explanation of R-values.

How to Insulate Existing Walls



If a wall has no insulation, it can be insulated with loose fill (material poured in, such as vermiculite), or with foam (foamed in under pressure). Because of the equipment and materials involved, you will probably want to get an insulation contractor to do these jobs.



The contractor will have to drill holes about 2 inches large above each wall cavity, formed by the studs in your walls through which he blows the insulation. If your home siding is clapboard or shingle, the holes probably will be bored from the outside. However, if your exterior walls are of masonry, metal, or a hard-to-patch material you may have to have the holes drilled through your inside walls.

A third option exists for anyone who is completely remodeling an old house. That is to completely remove the inside walls, exposing the studs, and install roll insulation as you would in any unfinished wall.

How to Insulate Unfinished Walls

Exposed studded walls in your home, basement, or garage can be insulated easily with batts or blankets of rockwool or glass fiber. Blanket insulation can be bought in rolls that conform to standard stud spacings. Batts are similar to roll insulation except that they are available in segments conforming to standard stud spacings.

In ordering enough of either blankets or batts to do the job, provide the insulation dealer with the total footage of all exposed studded walls to be insulated. Of course, subtract openings for doors and windows from the gross wall area first. And specify the width between studs (usually 16 or 24 inches on center) to get insulation that fits.

Your dealer can help you to select from among kraft-faced, foil-faced, or unfaced insulation the kind best suited for your particular job. When using unfaced batts, it is necessary to add a vapor barrier facing the interior of the room or building. This is usually a 6-mil polyethylene sheet.

When using blanket insulation, measure the length of the stud space and add 2 inches. Place it on a piece of scrap wood or wall board for cutting. When cutting faced insulation, keep the facing up. Compress the material with one hand and cut with the other. Peel back 1 inch of the insulation at the top and at the bottom of the batt facing to form a stapling flange for the top and bottom of the batt. (If you are using 48-inch precut batts, it will be necessary to peel back insulation only at one end.)

Stapling the batt into place can be done in one of two ways.

FACE STAPLING, refers to the technique of stapling the flange to the surface of the stud facing you. Be careful not to allow insulation to get between the flange and the face of the stud. A bulge will result in the finished wall if you are careless about this. Face stapling gives the best vapor barrier. One line of staples can be used to fasten down the two overlapping flanges on each stud. Pull the flange strips flat to the stud as you work your way down the stud and staple them every 3 to 5 inches. Staple the flange at the bottom last.

INSET STAPLING is done by stapling the flange to the inner side of the 2- by 4-inch studs. If you are using a foil-faced batt, inset staple it to create a 3/4-inch air space between the foil and the wall board that you install later. As before, staple from the top down, 3 to 5

inches apart. When using unfaced batts, press the insulation into the stud cavity, filling all spaces, especially around windows and doors.

In the inset stapling examples above, use a vapor barrier of 6-mil polyethylene stapled across the whole wall before putting on the wall board. Staple it across window and door spaces. Then cut out the openings with a sharp knife.

How to Insulate Irregular Spaces

As you encounter water pipes and heating ducts, compress and fit insulation behind them to keep them from freezing or losing heat to the outside. Push as much insulation as possible behind electrical boxes. When fitting insulation around pipes, wires, and ducts, avoid tearing the vapor barrier.

When you encounter irregular spaces between studs, you will have to cut down the larger batts to fit. Remember to peel a 1-inch flange on faced insulation to staple it in place. To insulate spaces wider than 24 inches (on center), apply pieces of insulation horizontally, cut flanges for stapling to studs, and use the inset stapling technique. Apply the separate vapor barrier required when inset stapling.

Small spaces between rough framing and door and window heads, jambs, and sills should be hand-stuffed with insulation, then covered with strips of 6-mil polyethylene.

How to Insulate Masonry Walls with Rigid Insulation

Rigid insulation, such as styrofoam, may be applied directly to a masonry wall. When applying it, be sure that all areas are covered completely with no gaps. Use 2-inch-thick rigid material.

If a masonry wall is true (flat and even), the best way to apply rigid insulation directly to the wall is to use a mastic to stick it onto the wall. Follow the manufacturer's instructions on application of the mastic. If the masonry wall is uneven or irregular, it may be advisable to have a contractor spray the wall with a cellulose spray. The contractor should use 1-1/2 inches or more of the cellulose.

Before using rigid insulation on the inside of masonry rooms, basement walls, masonry crawl space, or foundation walls, contact your local building inspector or fire marshal about the safest cover material to use over your rigid insulation, as it is flammable.